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ABSTRACT

The paper describes ways in which tools, or aids, can promote the interaction of mentally retarded persons with their environment. A classification of these aids is proposed according to psychological characteristics (such as senses, intelligence, knowledge, decision making, and action) as well as types of interaction (such as comprehension, communication, and physical influences). Intellectual aids are discussed in terms of space, time, quality, quantity, causes, and the importance of their accessibility for intellectually handicapped persons. (CL)

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AIDS-INTELLIGENT AIDS

A CONCEPTUAL INVESTIGATION

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AIDS - INTELLECTUAL AIDS

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CONTENTS

		Page
1.	INTERACTION	2
2.	RESOURCES	2
	Biological resources	
	Psychological resources	
3.	AIDS	3
3.1	Introduction	3
3.2	Biological aids	4
3.3.	Psychological aids	4
3.4	Interaction aids	5
3.5	Technical/social aids	5
3.6	Learning/utilization	5
4.	AIDS FOR THE HANDICAPPED	6
5.	INTELLIGENCE AND INTELLECTUAL AIDS	6
6.	INTELLECTUAL HANDICAPS	7
7.	INTELLECTUAL HANDICAP AIDS	8

1. THE INTERACTION OF HUMAN BEINGS AND THE ENVIRONMENT

Human beings have to be at one with their environment in order to survive. The environment contains everything needed to meet their requirements.

Interaction consists of people:

- observing and understanding their surroundings
- dealing with their surroundings
- communicating with their social environment, first and foremost other people
- being physically affected by their environment.

2. HUMAN BEINGS HAVE VARIOUS RESOURCES TO FACILITATE INTERACTION

Human beings possess various characteristics or capabilities enabling them to interact with their environment which can be of more or less use. The material basis is found in the ten organic systems of the biological system

- skin and mucous membranes
- motor system
- digestive system
- secretion
- circulation
- respiration
- hormone activities
- reproductive system
- nervous system
- perceptive organs

These organic systems establish certain preconditions and set certain limits which may vary between individuals.

The psychological characteristics include an information processing aspect of human beings. Information is of two types:

- emotional
- perceptual

Emotional information (feelings experienced) provides data on the level of needs of the inner environment. Perceptual information (senses) supplies data which mainly concerns the external environment. If emotion/desire is united with senses/knowledge and this results in an action then the target selected by desire can be reached with knowledge showing the way. Psychological characteristics can be diveded into four sub-systems:

- emotional processes
- knowledge processes
- decision-making processes
- action

Emotional processes consist of the level of need, emotional processing and attitudes. Knowledge-processes comprise sense, intelligence (conceptual processing) and knowledge. That gives eight groups of characteristics:

- senses (perception)
- intelligence
- knowledge
- state of need (including emotions)
- emotional processing
- attitudes
- decision making
- action

In addition there is the acquisition of both knowledge and emotions.

3. AIDS

3.1 Introduction

Sometimes human beings can strengthen their resources for the interaction with the environment by acquiring tools called aids. The purpose of an aid is therefore to strengthen the biological and psychological characteristics possessed by human beings in order to interact better with their environment. Every tool that human beings have acquired is such an aid. Aids can therefore be divided up either in terms of

the biological or psychological resources that are to be strengthened or on the basis of the type of interaction which is to be improved.

3.2 Biological classification of aids

I will not be examining this group in detail but I wanted to mention it and provide examples of such aids so that this type of aid is not overlooked. On the basis of the division of the organic systems, one can mention circulatory aids, respiratory aids, digestive aids, motor system aids and sense organ aids, for example. These aids can be mechanical, electronic, etc., but are often of a chemical (pharmacological) nature.

3.3 Psychological classification of aids

However, if the psychological structure is used instead when categorizing the aids a somewhat similar break-down results. But light is also thrown on aspects not included in the biologically-based classification (vice versa).

Below I list the various psychological characteristics and examples of aids in the form of a table.

Senses	glasses, hearing aids, radar, fire alarms, colour charts, plumb-lines, scales, lights, speedometer, and other registration instruments
Intelligence	see next section
Knowledge	memoranda, encyclopedias, handbooks
State of need	beds, clothes, food, toilets, buildings, somnisacients, depressants, stimulants
Emotion processing	literature, music, films, talk
Attitudes, evaluation interests	information and programmes on TV, cinema, debate literature, ethical standards (legal books, the Bible)
Decision making	
Action	typewriters, cutlery, hammers, scissors, brushes, cars, rakes
Acquisition of knowledge	books
Acquisition of emotions	

So all the tools we have can be related to one or more characteristics.

3.4 Interaction aids

I have taken up four types of interaction, viz. understanding, dealing with, communication with and influence from the environment. Interaction is another basis for classification in addition to the above and these can both be related to each other as all the different biological and psychological characteristics are used to varying degrees in interaction. The types of interaction can be used to exemplify the basis for classifying aids as shown in the table below.

Comprehend, understanding	dictionaries, patterns, manuals
Operating	shovels, cutlery
Communicating	telephone, newspaper/magazines, radio
Influencing physically	medicants, surgical instruments, food, water/soap

3.5 Technical or social aids

It is mainly technical aids that are referred to, i.e. material aids. In technical terms mechanics, electronics, chemistry, etc., can be utilized. Normally social aids are not referred to, but naturally assistance is available from people who are more capable - weak people can be helped by stronger, the blind by the seeing, etc.

3.6 Aids for learning or utilization

Some aids are available for use without the expectation of making them unnecessary once a faculty has been developed, others are intended to provide assistance just when training or learning. Learning aids can be called "pedagogic aids". The others can be called "aids for utilization". An expression is required which differentiates between a purpose for learning and a purpose for using. The learning/utilization dimension cannot be pushed to one side but should reinforce the previously-mentioned dimensions. Thus one can talk about the technical and social aspects of learning aids or learning to understand, operate, communicate, etc.

4. AIDS FOR THE HANDICAPPED

Aids for minority groups who due to their deficiency encounter special difficulty with interaction can be called aids for the handicapped. The borders between our ordinary aids are sometimes clear, sometimes nonexistent. There is a list of aids for which grants are given. These are then formally aids for the handicapped.

5. INTELLIGENCE AND INTELLECTUAL AIDS

Intelligence comprises three processes,

- the structuring of experiences
- the control of action and thought operations using the structures which have been formed
- - symbolization as a support for structung and operations

This occurs in five categories:

- space	which answers the question "where?"
- time	whcih answers the question "when?"
- qualities	which answers the question "what?"
- quantities	which answers the question "how much?"
- causes	which answers the question "why?"

Three processes in five categories give the following table of the various aspects of intelligence:

	processes		
category	structures	operation	symbolization
space	conception of space	space operations	space symbols
time	conception of time	time operations	time symbols
quality	conception of quality	quality operations	quality symbols
quantity	conception of quantity	quantity operations	quantity symbols
causes	conception of causes	causes operations	causes symbols

When talking about intellectual aids it seems best to start from the basis of the different categories. The question then is what aids are available and which are needed in the various categories. This can be exemplified schematically as follows:

conception of space space operations space symbols	description of journeys, maps, compass, lists of addresses, templates, rulers, dictionaries
conception of time time operations time symbols	timepieces, calendars, time-tables, stop watches, alarm clocks, planning, schedules, dictionaries
conception of quality quality operations quality symbols	colour charts, illustrated dictionaries, cook books, automated drawings, handbooks, tape recorders, memoranda
conception of quantity quantity operations quantity symbols	computers, tables, collections of formulae
conception of causes causes operations causes symbols	

We have thus equipped ourselves with different aids in order to orient ourselves in space, time, among qualities and objects, quantitively and in the context of causes. Sometimes we have even acquired assistance in action and thought operations and in trying to find or understand words. These aids can be called intellectual aids.

6. INTELLECTUAL HANDICAPS

Naturally people suffering from intellectual handicaps require intellectual handicap aids. Intellectually handicapped persons have a clear, well-

structured understanding of reality but it is of a more concrete and simpler nature than that possessed by persons with normal intelligence. This means that their perspective is reduced and the handicap is characterized by a simpler understanding of space, time, quality (and objects), quantity and causes. The most severely handicapped persons have a particularly simple understanding while the concept of reality possessed by the less handicapped only differs slightly from that of persons with normal intelligence. By the same token the ability to control operations is limited in varying degrees. The most severely intellectually handicapped can only control their actions but not perform thought processes if a concrete foundation for the thoughts exists based on experience. They cannot think starting from abstract concepts, metaphors or hypotetic situations. Even the ability to symbolize is more or less handicapped. The most severely handicapped can only manage body language and signals while moderately handicapped persons can even talk and understand pictures and the less severely handicapped can read and write.

7. INTELLECTUAL HANDICAP AIDS

Naturally the intellectually handicapped have a special need of intellectual aids. This has not attracted special attention. Some of the aids have been used as pedagogic aids but have not been available for the handicapped in their daily lives. Not infrequently "social aids" have replaced other aids, i.e. people (parents, nursing staff, teachers, supervisors) have done what was required for the handicapped. This can be over-protection and result in a loss of independence to the detriment of the personality development of the handicapped person. One obstacle has been presudicial misconceptions of what intellectually handicapped persons can do themselves. It has occurred that mildly intellectually handicapped persons have been refused electrically-powered wheelchairs because it was not felt that they could manage them. In actual fact even the severely handicapped can manage to operate such wheelchairs. Inetellectually handicapped persons require access to normal aids (e.g. stop watches, tape recorders), other aids (e.g. electrically-powered wheelchairs) and also special aids just for the intellectually handicapped. Some of our normal aids are too abstract for the intellectually handicapped and require adaption. A simplified pocket calculator can be made so that it only calculates

the changeone should receive in a shop, another could calculate the service charge when entering the total amount of a bill.

The Swedish Institute for the Handicapped has performed field studies, surveys and taken the intiative in developing such intellectual handicap aids as part of several sub-projects performed in conjunction with the ALA research group. This has enabled the ALA group to provide the necessary factual basis while the Swedish Institute for the Handicapped has contributed the practical and technical aspects. This collaboration continues.

The Swedish Institute for the Handicapped is the national body responsible for aids for the handicapped. The Institute conducts surveys, R & D, provides information and training and carries out tests of technical aids, as well as infrastructure planning for people with reduced abilities. The Institute modifies vehicles for disabled drivers. The Institute is financed by central and local government funds.

ala

ALA (Adjustment to Life and Work) is a research group connected to the National Society for persons with mental handicap (RFUB). The research into mental retardation conducted by ALA is mainly of a psychological/ pedagogical character. It attempts to describe the nature of the handicap, its psychological effects on personality development, the interaction between the individual and the environment, and how the environment should be adapted to the intellectually handicapped.